

## **REMARKS**

With the entry of the foregoing amendments, claims 29-31, 45-46, 54-55, 58, 60, 62-63, 65-66, 71-73, 75-76, 78, and 93-101 are pending in the present application. Claims 29, 45-46, 55, 62-63, 66, 73, and 78 have been currently amended herein. Claims 1-28, 32-44 and 47-53 are cancelled herein as being drawn to non-elected inventions. Claims 56-57, 59, 61, 64, 67-70, 74, 77 and 79-92 have been cancelled. Claims 94-101 are newly added. Claims 29-31, 45-46, 54-55, 58, 60, 62-63, 65-66, 71-73, 75-76, 78, and 93-101 will be examined on their merits.

In the Office Action, the rejection is maintained that claims 45-46, 62, 64-65, 73, and 86-93 and all subsequently dependent claims stand variously rejected under 35 USC §112, second paragraph as being vague and indefinite. Also, the rejection is maintained that claims 29-31, 45-46, 54-55, 58, 60, 62, 66, 91 and 93 stand variously rejected under 35 U.S.C. 112, first paragraph, as lacking adequate written description of the claimed invention. Likewise, the rejection is maintained that claims 29-31, 45-46, 54, 58, 60, 62, 64-66, 73, 78, 80, 82-86, and 88-93 stand variously rejected under 35 U.S.C. 112, first paragraph, as lacking sufficient enablement of the claimed invention. The rejection to claims 64, 78, 85, and 92 is maintained under 35 U.S.C. 102(b) as being anticipated by Baxter-Lowe, L.A. (1996, U.S. Patent 5,545,526). The rejection to claims 45-46, 59, 61-62, 66, and 91 is maintained under 35 U.S.C. 102(b) as being anticipated by Oommen *et al.* (1994, *The Plant Cell* 6:1789-1803). Also, the rejection to claims 45-46, 58, 62, 66, and 91 is maintained under 35 U.S.C. 102(e) as being anticipated by Xue *et al.* (filed Sept. 9, 1996 U.S. Patent 6,420,629). All rejections are respectfully traversed. Applicants respectfully request reconsideration and withdrawal of all the rejections, and allowance of the claims in view of the foregoing amendments and for the reasons set forth below.

### **A. Allowable Subject Matter**

Applicants acknowledge that claims 63, 71, 72, and 76 stand free of the prior art, given the failure of the prior art to teach or reasonably suggest an isolated polynucleotide of SEQ ID NO:5. Applicants thank the Examiner for his indication that, although, claim 63 is objected to for depending on a rejected base claim, claim 63 would be allowable if rewritten

in independent form, and that claims 71, 72, and 76 are in condition for allowance. Applicants submit that instead of rewriting claim 63 in independent claim format, independent claim 45 was amended to recite SEQ ID NO:5 and claim 63 dependent thereon was amended to include SEQ ID NOs: 15, 16 and 17.

**B. Amendments to Claims**

Claims 29, 45, 46, 62, 63, 73, and 78 have been amended herein for clarification purposes only. Claims 29, 45, and 46 were amended to recite the regulatory sequence having SEQ ID NO:5. Also, the phrase lignin-specific has been deleted from claims 45, 46, and 73. Claims 55 and 63 have been amended to include SEQ ID NOs: 15, 16 and 17. Also the phrase transcriptional regulatory region has been deleted from claims 55 and 63 to improve the clarity of the claims. Also, claim 62 has been amended to correct a minor clerical error. Furthermore, claim 73 has been amended to include the phrase "is used to express genes in the xylem of the stem, root, or midrib of leaves". Also, claim 78 has been amended to delete the limitations from elements b) through g). Applicants respectfully submit that no new matter was added to the application.

**C. Newly added claims**

New claims 94-101 have been added herein for clarification purposes only. Applicants respectfully submit that new claims 94-101 are all fully supported by the contents of the specification and claims, as originally filed. Applicants respectfully submit that the newly added claims add no new matter to the application.

**D. Rejection of Claims**

**1. Claims 45, 46, 62, 64, 65, 73, and 86-93 Stand Rejected Under 35 USC §112, Second Paragraph.**

The Office Action asserts that claims 45, 46, 62, 64, 65, 73, and 86-93 and all subsequent dependent claims are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Office Action asserts that claims 45, 46, 62, 64, 65, 91, 92, and 93 are indefinite in the recitation "transcriptional regulatory region". The Examiner further asserts that Applicants have not established the metes and bounds of a transcriptional regulatory region and it is unclear what type or length of DNA sequence is

encompassed by this term. The Examiner also asserts that with respect to claims 45, 46, 73, and 91 the recitation "Lignin-specific" is unclear. Also, the Examiner asserts that in claims 62 and 86-90 the term "a" before xylem should be replaced with the term --the--.

Applicants respectfully submit that claims 45, 46, 62, 65, and 73 have been amended as set forth herein above to further clarify the following phrases: "transcriptional regulatory region" and "lignin-specific". Also, with respect to the antecedent basis before the term xylem, claim 62 has been amended as suggested by the Examiner. Also, claims 64 and 86-92 have been cancelled. Accordingly, Applicants respectfully submit that, based on the amendment of the subject claims, the rejection has been obviated.

**2. Rejection of Claims 29-31, 45-46, 54-55, 58, 60, 62, 66, 91, and 93 Under 35 USC §112, First Paragraph.**

**i) Written Description**

Claims 29-31, 45-46, 54-55, 58, 60, 62, 66, 91, and 93 stand rejected under 35 USC §112, first paragraph. The Office Action asserts that the specification does not contain a written description of the claimed invention which would reasonably convey to one skilled in the art that the inventor(s) had possession of the claimed invention at the time the application was filed. Specifically, the Examiner recites that in those claims in which Applicant has defined a sequence in terms of a sequence identifier, the written description is fulfilled. But, in claims in which Applicant defines their claims in terms of a "4-coumarate Co-enzyme A ligase gene", the written description is not satisfied. The Examiner asserts that the Applicant has not defined a "4-coumarate Co-enzyme A ligase gene", and that Applicant can define this term by stating that a "4-coumarate Co-enzyme A ligase gene" always comprises SEQ ID NO:5.

Applicants respectfully submit that in the interest of advancing prosecution, Applicants have amended independent claims 29, 45, 46, and 78 to more clearly identify what Applicants consider to be their invention and to recite what is, in fact, evident from the application as filed. Specifically, independent claims 29, 45, and 46 have been amended for clarification to recite the SEQ ID NO: 5 (which correspond to the structural sequence information in the sequence listing). Also, claim 78 was amended to delete elements b) through g). All amendments are fully supported in the specification and claims as originally

filed. As such, all claims that depend from independent claims 29, 45, 46, and 78 also meet the written description requirements of 35 USC §112, first paragraph. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

## **ii) Scope of Enablement**

Claims 29-31, 45-46, 54, 58, 60, 62,64-66,73, 78, 80, 82-86, and 88-93 stand rejected under 35 USC §112, 1st ¶. The Office Action asserts that the specification, “while being enabling for claims limited to an isolated and purified DNA molecule comprising the transcriptional regulatory region as shown in SEQ ID NO:5, which is characterized by having promoter activity in the xylem of the stem, of the leaf mid-rib and in the root of transformed tobacco plants, does not reasonably provide enablement for claims broadly drawn to an isolated and purified DNA molecule, comprising a DNA segment comprising a transcriptional regulatory region of any plant 4CL gene, or a 4CL gene promoter from aspen; an expression cassette, a polynucleotide sequence, or gene promoter comprising SEQ ID NO's:15-17 alone or in combination to express another gene in the xylem of the stem, root or leaf mid rib.” (See Office Action, pages 4-5)

The Examiner further asserts that based on Applicants specification, Applicants are only enabled for transforming a plant with SEQ ID NO:5 to be used as a promoter to express genes in the xylem of the stem, root and midrib of leaves. Applicants have not demonstrated that anyone of the three cis-acting elements, i.e., SEQ ID NOs: 15-17, either alone or in combinations of two's, can direct expression in the same manner as SEQ ID NO:5.

Although, Applicants respectfully submit that adequate enablement and guidance for one skilled in the art to practice the claimed methods is provided, without requiring undue experimentation. In the interest of advancing prosecution, and to obviate the need for an appeal, Applicants have amended independent claims 29, 45, 46 and 78, and dependent claims 55, 62-63, and 73 to improve the clarity of the subject claims. Furthermore, as recited hereinabove in the claim listing, Applicants have cancelled claims 56-57, 59, 61, 64, 67-70, 74, 77 and 79-92 to also improve the clarity of the claims. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

To the extent the outstanding rejections under § 112, 1st and 2nd ¶¶, are applicable to newly added claims 94-101, Applicants respectfully submit that the foregoing remarks,

comments and arguments rebut any *prima facie* case of lack of written description, nonenablement and indefiniteness with respect to these claims.

**3. Rejection of claims 64, 78, 85, and 92 under 35 U.S.C. 102(b).**

Claims 64, 78, 85, and 92 stand rejected under 35 U.S.C. 102(b) as being anticipated by Baxter-Lowe, L.A. (1996, U.S. Patent 5,545,526). The Office Action asserts that the claims are drawn to a polynucleotide comprising a plant sequence as shown in SEQ ID NO:17 and that Baxter-Lowe teaches a DNA sequence that exhibits 100% sequence identity to the claimed box L sequence, which is SEQ ID NO:17 and as such anticipates the claimed invention. In the interest of advancing prosecution and to obviate the need for an appeal, Applicants have amended claim 78, to delete elements b) through g). Also, claims 64, 85, and 92 have been cancelled. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**4. Rejection of claims 45-46, 59, 61-62, 66, and 91 under 35 U.S.C. §102(b).**

Claims 45-46, 59, 61-62, 66, and 91 stand rejected under 35 U.S.C. 102(b) as being anticipated by Oommen *et al.* (1994, *The Plant Cell* 6:1789-1803). The Office Action asserts that Oommen *et al.* is used against the above-cited claims because the claims recite a transcriptional regulatory region of a 4CL gene which has not been defined. The Examiner, also, asserts that amending the claims to recite that the transcriptional regulatory region of a 4CL gene promoter comprises the sequence of SEQ ID NO:5 will obviate the rejection.

At the outset, Applicants direct the Examiner's attention to the fact that the disclosure of Oommen *et al.* only suggests use of the isoflavone reductase (IFR) promoter to confer different patterns of developmental expression in transgenic plants. The IFR promoter functions via the isoflavonoid branch of the phenylpropanoid pathway to specify the expression of a polynucleotide coding sequence in epidermal tissues of a plant, not the xylem of a plant as recited e.g., in pending claims 46, 62, and 66. In fact, there is no mention at all of the 4CL transcriptional regulatory sequence that directs expression of genes in the xylem of plants in Oommen *et al.* Therefore, Applicants submit that Oommen *et al.* does not anticipate any claims of the present invention.

Alternatively, in the interest of advancing prosecution, Applicants respectfully submit that independent claims 45 and 46 have been amended for clarification purposes to recite SEQ ID NO:5 as supported by the original specification of the present invention. Nothing in Oommen *et al.* teaches or suggests this particular limitation. As such, all claims dependent on independent claims 45 and 46 are also not anticipated by Oommen *et al.* Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**5. Rejection of claims 45, 46, 54, 58, 62, 66, and 91 under 35 U.S.C. 102(e).**

Claims 45, 46, 54, 58, 62, 66, and 91 stand rejected under 35 U.S.C. 102(e) as being anticipated by Xue *et al.* (filed Sept. 9, 1996 U.S. Patent 6,420,629). The Office Action asserts that the disclosed promoter fragment of Xue *et al.* would inherently contain “a transcriptional regulatory region” or a fragment of SEQ ID NO:5 and as such the claimed invention is anticipated by Xue *et al.*

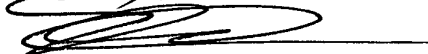
Applicants respectfully submit that independent claims 45 and 46 have been amended for clarification purposes to recite the regulatory sequence SEQ ID NO:5, supported by the original specification and claims of the present invention. Applicants submit that nothing in Xue *et al.* teaches or suggests this particular regulatory sequence. As such, all claims dependent on independent claims 45 and 46 are also not anticipated by Xue *et al.* Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**SUMMARY**

In view of the above, Applicants respectfully request entry of the amendment proposed herein under 37 CFR §1.116. Applicants respectfully submit that entry of the amendments proposed herein would materially advance prosecution of the present application and remove issues for consideration upon appeal, should appeal become necessary. The amendment to claims 29, 45-46, 62-63, 73 and 78, along with the newly added claims 94-101 proposed herein focus and clarify what Applicants claim as their invention. For reasons set forth in the remarks, above, Applicants respectfully submit that the amendments proposed herein are responsive to grounds for rejection set forth in the Final Office Action. Applicants respectfully submit that all the amendments proposed herein are admissible, under 37 CFR §1.116.

Applicants respectfully submit that the present application would be in condition for allowance before or after entry of the proposed amendments, and a favorable action thereon is respectfully requested, whether the amendments are entered or not. However, Applicants prefer that the amendments proposed herein be entered in order to materially advance prosecution of the present application, and in order to reduce the number of issues on appeal, should appeal become necessary. Should the Examiner have any questions about the proposed amendments or feel that any point not addressed by the proposed claims requires consideration, the Examiner is invited to contact the undersigned at the telephone number listed below.

**Respectfully submitted,**



Sara D. Vinarov

Reg. No. **48,524**

**Michael Best & Friedrich LLP  
100 East Wisconsin Avenue  
Milwaukee, Wisconsin 53202-4108  
(414) 271-6560**